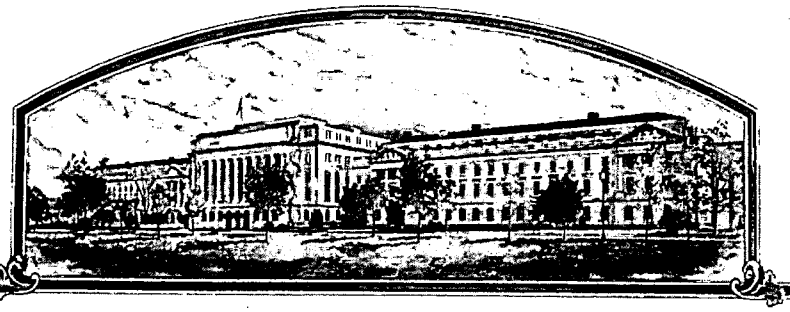

No. 201500288

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

North Carolina State University as represented by the Diector of NCSU's Office of Technology Transfer

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

An application requesting a certificate of protection for an alleged distinct variety of sexually reproduced, or tuber propagated plant, the name and description of which are contained in the application and exhibits, a copy of which is hereunto annexed and made a part hereof, and the various requirements of LAW in such cases made and provided have been complied with, and the title thereto is, from the records of the PLANT VARIETY PROTECTION OFFICE, in the applicant(s) indicated in the said copy, and Whereas, upon due examination made, the said applicant(s) is (are) adjudged to be entitled to a certificate of plant variety protection under the LAW.

Now, therefore, this certificate of plant variety protection is to grant unto the said applicant(s) and the successors, heirs or assigns of the said applicant(s) for the term of TWENTY years from the date of this grant, subject to the payment of the required fees and periodic replenishment of viable basic seed of the variety in a public repository as provided by LAW, the right to exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or conditioning it for propagation, or stocking it for any of the above purposes, or using it in producing a hybrid or different variety therefrom, to the extent provided by the PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

PEANUT

'Wynne'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the* ***City of Washington, D.C.*** *this twelfth day of May, in the year* ***two thousand and sixteen.***

Attest:

Commissioner
Plant Variety Protection Office

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions* — Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME	3. VARIETY NAME
N.C. State University as represented by the Director of NCSU's Office of Technology Transfer	**N08081olJC**	**Wynne**

4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)	5. TELEPHONE *(include area code)*	FOR OFFICIAL USE ONLY
Office of Technology Transfer, Box 8210 **N.C. State University, Raleigh, NC 27695-8210** **USA**	**(919) 515-7199** 6. FAX *(include area code)* **(919) 515-3773**	PVPO NUMBER

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*	8. IF INCORPORATED, GIVE STATE OF INCORPORATION	9. DATE OF INCORPORATION	FILING DATE
University			

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*

Myers Bigel Sibley & Sajovec, P.A.
4140 Parklake Ave, Ste 600
Raleigh, NC 27612

FEES RECEIVED — FILING AND EXAMINATION FEES: $ DATE
CERTIFICATION FEE: $ DATE

11. TELEPHONE *(include area code)*	12. FAX *(include area code)*	13. E-MAIL
919-854-1400	919-854-1401	instructions@myersbigel.com; abonnen@myersbigel.com

14. CROP KIND (Common Name)	16. FAMILY NAME (Botanical)	18. DOES THE VARIETY CONTAIN ANY TRANSGENES? *(OPTIONAL)* ☐ YES ☒ NO
Peanut	**Fabaceae**	IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERICALIZATION. _____
15. GENUS AND SPECIES NAME OF CROP	17. IS THE VARIETY A FIRST GENERATION HYBRID?	
Arachis hypogaea	☐ YES ☒ NO	

19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

a. ☒ Exhibit A. Origin and Breeding History of the Variety
b. ☒ Exhibit B. Statement of Distinctness
c. ☒ Exhibit C. Objective Description of Variety
d. ☒ Exhibit D. Additional Description of the Variety (Optional)
e. ☒ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ☒ Declaration Regarding Deposit
g. ☒ Voucher Sample *(3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
h. ☒ Filing and Examination Fee ($4,382), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
☒ YES (If "yes", answer items 21 and 22 below)
☐ NO *(If "no", go to item 23)*
☐ UNDECIDED

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?
☒ YES ☐ NO
IF YES, WHICH CLASSES? ☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO
IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS.
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?
☒ YES ☐ NO
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)?
☐ YES ☒ NO
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER		SIGNATURE OF OWNER	
NAME *(Please print or type)*		NAME *(Please print or type)*	
Kultaran Chohan, Ph.D.			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
NCSU – Senior Licensing Associate	03/10/2015		

Exhibit A
Origin and Breeding History of the Variety

Large-seeded virginia-type peanut variety Wynne, tested under the experimental designation N08081olJC, was developed by a combination of pedigree selection and modified pedigree selection (single-seed descent) among and within families descended from a single backcross. The initial cross, X03036, was made in the winter of 2002-2003 using cultivar 'Bailey'[1] as a female and high-oleic large-seeded cultivar 'Brantley'[2] as a male. The second cross, X03157, was made in the summer of 2003 using Bailey as a female and F_1 plants of cross X03036 as males. Five BC_1F_1 seeds from the second cross were planted at the 2003-2004 winter nursery at the Illinois Crop Improvement Association's facility in Juana Diaz, PR (the "Puerto Rico Winter Nursery" or "PRWN").

Five individual BC_1F_1 plants were harvested and their $BC_1F_{1:2}$ progeny planted separately at the Peanut Belt Research Station (PBRS) at Lewiston, NC, in Bertie Co. in 2004. The $BC_1F_{1:2}$ plots were subjected to plant selection, and five progeny of each selected plant were subjected to gas chromatography to determine their fatty acid types. Families with all five members having linoleic acid levels below 77 g kg^{-1} were deemed to represent high-oleic plant selections. $BC_1F_{2:3}$ progenies of selected high-oleic $BC_1F_{1:2}$ plants were planted at the 2004-2005 PRWN where a single pod was harvested from each mature plant within a family, then the balance of the pods were harvested in bulk. A single $BC_1F_{2:4}$ seed was shelled from each pod in the single-pod harvest bag, and a selection nursery was planted in 2005 at PBRS. Bulk-harvested $BC_1F_{2:4}$ seeds were used to plant replicated (r=2) trials to evaluate the families' reactions to the foliar pathogens leaf spot and TSWV and to soil-borne diseases CBR and SB. The leaf spot trial was conducted at PBRS with no application of leaf spot fungicide during the season. The TSWV trial was conducted at PBRS with plants in wide (20 on or 51 cm) plant spacing and with no insecticide applied to control thrips (*Franklinella fusca*) the predominant insect vector of TSWV in the Virginia-Carolina area. The CBR trial was conducted on infested soil at the Upper Coastal Plain Research Station (UCPRS) at Rocky Mount, NC, in Edgecombe Co. with no application of metam sodium, the fumigant used to control CBR. The SB trial was conducted on infested soil at the Joey Baker farm in Bertie County, NC, with no application of fluazinam or boscalid, the only effective SB controls labeled at the time. Plots were planted in May and stand counts made in June. Symptomatic plants were counted in each plot, the data converted to a proportion of symptomatic plants in each plot, and families with low incidence of TSW, CBR and SB identified. Defoliation due to leaf spot was rated shortly before harvest using a nine-point proportional scale where a rating of 1 indicated no defoliation, a rating of 5 indicated 50% defoliation, and a rating of 9 indicated complete defoliation. Plant selections were made in the resistant $BC_1F_{2:4}$ families in the nursery grown for that purpose at PBRS.

Twenty-one $BC_1F_{6:7}$ progenies of selected high-oleic plants were grown at the 2006-2007 PRWN, and harvested only in bulk as no further selection within families was anticipated. $BC_1F_{6:8}$ families were grown in replicated trials to assess reactions to leaf spot and TSW at PBRS, CBR at UCPRS, and SB at the Ben Harris farm in Northampton County, NC. The families were also entered in yield trials at PBRS and UCPRS with full chemical control of diseases, and a seed nursery was planted for bulk harvest at PBRS to multiply seed of selected

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[1] Isleib, T.G., S.R. Milla-Lewis, H.E. Pattee, S.C. Copeland, M.C. Zuleta, B.B. Shew, J.E. Hollowell, T.H. Sanders, L.O. Dean, K.W. Hendrix, M. Balota, and J.W. Chapin. 2011. Registration of 'Bailey' peanut. J. Plant Reg. 5: 27-39. [doi:10.3198/jpr2009.12.0742crc]

[2] Isleib, T.G., P.W. Rice, R.W. Mozingo II, S.C. Copeland, J.B. Graeber, W.F. Novitzky, H.E. Pattee, T.H. Sanders, R.W. Mozingo, and D.L. Coker. 2006. Registration of 'Brantley' peanut. Crop Sci. 46: 2309-2311.

families. By this stage, only descendants of the second and fourth BC_1F_1 plants had survived the selection process and only one BC_1F_2 plant per BC_1F_1. Within the BC_1F_1-derived families, all descendants traced to only five BC_1F_4 plants.

In 2008, the high-oleic disease-resistant families identified as X03157-BC1F1-04-01-S-02-S-02: F09 was numbered N08081olJC. In 2008, N08081olJC was tested in the Jumbo Line Advanced Test (JAT) at PBRS and UCPRS. In 2009, N08081olJC was tested in the Adsvanced Yield Test (AYT) at PBRS, UCPRS, and the Border Belt Tobacco Research Station (BBTRS) at Whiteville, NC, in Columbus Co. From 2009 through 2012, both lines were tested at three sites in the AYT. Because of its high yield potential, N08081olJC was used as a performance check in several trials during 2009-2012. Reactions of both lines to field incidence of leaf spot, CBR, SB, and TSWV were measured in trials of lines developed for reasons other than disease resistance in 2009-2012. SB and CBR were also measured under controlled conditions in greenhouse assays conducted in 2012 and 2013. In 2010 through 2012, N08081olJC was entered in the PVQE program[3,4,5,6,7,8] conducted at five or six sites annually. N08081olJC was entered in the UPPT as an "official" entry in 2010[9] and 2011[10], *i.e.*, an entry tested at all locations versus "local options" which are tested only at individual sites at the discretion of the participants, and as a local option in 2012[11]. UPPT testing included evaluation of flavor[12].

Statement of Uniformity and Stability

Wynne was observed over seven (7) generations and was found to be uniform and stable. No off types were observed in Wynne.

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[3] Balota, M. 2011a. Peanut Variety and Quality Evaluation results, 2010. I. Agronomic and grade data. Va. Polytech. Inst. & State Univ. / Va. Agric. Exp. Stn. / Tidewater Agric. Res. & Ext. Ctr. Info. Ser. No. 494. 81 p.

[4] Balota, M. 2011. Peanut Variety and Quality Evaluation results, 2010. II. Quality data. Va. Polytech. Inst. & State Univ. / Va. Agric. Exp. Stn. / Tidewater Agric. Res. & Ext. Ctr. Info. Ser. No. 495. 54 p.

[5] Balota, M. 2012. Peanut Variety and Quality Evaluation results, 2011 I. Agronomic and grade data. Va. Polytech. Inst. & State Univ. / Va. Agric. Exp. Stn. / Tidewater Agric. Res. & Ext. Ctr. Info. Ser. No. 497. 54p.

[6] Balota, M. 2012. Peanut Variety and Quality Evaluation results, 2011. II. Quality data. Va. Polytech. Inst. & State Univ. / Va. Agric. Exp. Stn. / Tidewater Agric. Res. & Ext. Ctr. Info. Ser. No. 498. 46 p.

[7] Balota, M., W.S. Monfort, and T.G. Isleib. 2013. 2012 Peanut Variety and Quality Evaluation results. I. Agronomic and grade data. Va. Polytech. Inst. & State Univ. / Va. Agric. Exp. Stn. / Tidewater Agric. Res. & Ext. Ctr. Info. Ser. No. 501. 63 p.

[8] Balota, M., W.S. Monfort, and T.G. Isleib. 2013. 2012 Peanut Variety and Quality Evaluation results. II. Quality data. Va. Polytech. Inst. & State Univ. / Va. Agric. Exp. Stn. / Tidewater Agric. Res. & Ext. Ctr. Info. Ser. No. 502. 64 p.

[9] Branch, W.D., M. Balota., T.G. Isleib, J.W. Chapin, J.P. Bostick, B.L. Tillman, M.D. Burow, M. Baring, and K.D. Chamberlin. 2011. Uniform Peanut Performance Tests, 2010. Univ. Georgia Coastal Plain Exp. Stn. Prog. Rep. No. 4-11. 25 p.

[10] Branch, W.D., M. Balota., T.G. Isleib, J.W. Chapin, J.P. Bostick, B.L. Tillman, M.D. Burow, M. Baring, and K.D. Chamberlin. 2012. Uniform Peanut Performance Tests, 2011. Univ. Georgia Coastal Plain Exp. Stn. Prog. Rep. No. 4-12. 23 p.

[11] Branch, W.D., M. Balota., T.G. Isleib, J.W. Chapin, J.P. Bostick, B.L. Tillman, M.D. Burow, M. Baring, and K.D. Chamberlin. 2013. Uniform Peanut Performance Tests, 2012. Univ. Georgia Coastal Plain Exp. Stn. Prog. Rep. No. 4-13. 23 p.

[12] Sanders, T.H., L.O. Dean, and M.C. Lamb. 2012. Uniform Peanut Performance Tests (UPPT) for 2011: Chemical, sensory and shelf-life properties by variety. On-line at http:// http://152.1.118.27/downloads.htm.

Exhibit B
Statement of Distinctness

The large-seeded virginia-type cultivar to which Wynne is most similar is Sugg. The simplest character that clearly distinguishes Wynne from Sugg is its fatty acid composition: Wynne has the high-oleic character, *i.e.*, it has an elevated level of oleic fatty acid (and a correspondingly depressed level of linoleic fatty acid) in its seed oil while Sugg is normal oleic. Wynne also has tan seed coats while Sugg has pink seed coats. The two differ in several other quantitative characters of interest to producers and processors of large-seeded virginia-type peanuts, but these differences are statistically significant only when means are computed across several years and/or locations, not in each trial (Tables 1-3).

Table 1. **Comparison of agronomic performance and grade factors of NCSU release Wynne with those of Bailey. Data from 2004-2013 NCSU trials conducted at Peanut Belt Research Station (Lewiston, Bertie Co., NC), Upper Coastal Plain Research Station (Rocky Mount, Edgecombe Co., NC), and Border Belt Tobacco Research Station (Whiteville, Columbus Co., NC).**

	Foreign material	Loose shelled kernels	Weight of 100 pods	Farmer stock fancy pods		Jumbo pods				Fancy pods				Jumbo-to-fancy ratio	Weight of 100 seeds	Super ELK	Extra large kernels	Sound mature kernels	Sound splits	Other kernels	Total SMK	Meat	Support price	Pod yield	Crop value	Oil content
				Content	Brightness	Content	Brightness	Redness	Yellowness	Content	Brightness	Redness	Yellowness													
	%	%	g	%	Hunter L	%	Hunter L	Hunter a	Hunter b	%	Hunter L	Hunter a	Hunter b		g	%	%	%	%	%	%	%	¢/lb	lb/A	$/A	% DM
Trials	34	34	31	33	33	33	33	33	33	33	33	33	33	34	31	31	31	31	31	31	31	31	31	34	31	28
Wynne	0.8	0.4	255	70.6	44.5	30.0	43.6	3.4	14.4	40.7	44.8	3.5	14.8	0.75	91.2	14.9	42.2	64.2	4.3	2.6	68.5	71.2	17.87	4387	644	49.65
Bailey	0.7	0.5	260	66.9	44.5	26.3	42.6	3.3	14.0	40.8	45.2	3.5	14.9	0.67	93.2	10.5	39.8	65.2	4.3	2.2	69.6	71.8	18.06	4352	668	49.62
Difference	+0.1^{ns}	-0.1^{ns}	-5^{ns}	+3.7*	+0.0^{ns}	+3.7*	+1.1*	+0.1^{ns}	+0.4*	-0.1^{ns}	-0.4^{ns}	+0.0^{ns}	-0.1^{ns}	+0.08^{ns}	-2.0*	+4.4**	+2.4*	-1.0†	+0.0^{ns}	+0.4†	-1.0*	-0.6†	-0.19^{ns}	-34^{ns}	-23^{ns}	+0.04^{ns}

ns,†,*,** Denote differences that were not significant or significant at the 10%, 5%, and 1% levels of probability, respectively.

Table 2. **Comparison of agronomic performance and grade factors of NCSU release Wynne with those of Bailey. Data from 2010-2013 Peanut Variety and Quality Evaluation trials conducted at Virginia Tech Tidewater Agricultural Research and Extension Center (AREC) (Suffolk, VA), Jack Pond farm (Sedley, Southampton Co., VA), Taylor Slade farm (Williamston, Martin Co., NC), NCDA Upper Coastal Plain Research Station (Rocky Mount, Edgecombe Co., NC), NCDA Border Belt Tobacco Research Station (Whiteville, Columbus Co., NC), Dan McDuffie farm (Council, Bladen Co., NC), and the Clemson University Pee Dee AREC at Florence, SC, and Edisto AREC at Blackville, SC.**

	Foreign material	Loose shelled kernels	Farmer stock fancy pods		Jumbo pods		Fancy pods		Jumbo-to-fancy ratio	Extra large kernels	Sound mature kernels	Sound splits	Total SMK	Other kernels	Damaged kernels	Meat content	Support price	Pod yield	Crop value
			Content	Brightness	Content	Brightness	Content	Brightness											
	%	%	%	Hunter L	%	Hunter L	%	Hunter L		%	%	%	%	%	%	%	¢/lb	lb/A	$/A
Trials	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Wynne	1.5	1.3	90	40.9	70.2	41.2	20.2	39.4	3.72	42.8	61.1	2.2	69.2	2.1	3.6	71.3	15.58	4403	716
Sugg	1.4	0.9	87	40.6	46.5	41.1	40.4	40.0	1.22	41.9	62.3	2.4	71.0	2.5	3.8	73.4	15.99	4201	695
Difference	+0.1^{ns}	+0.4*	+3.3**	-0.0^{ns}	+23.2^{ns}	-0.1^{ns}	-20.0^{ns}	-0.9**	+2.42^{ns}	+0.9^{ns}	-1.1†	-0.2^{ns}	-1.8**	-0.3*	-0.2^{ns}	-2.1**	-0.42^{ns}	+202^{ns}	+21^{ns}

ns,†,*,** Denote differences that were not significant or significant at the 10%, 5%, and 1% levels of probability, respectively.

Table 3. **Comparison of blanching and composition traits of NCSU release Wynne with those of Sugg. Data from 2010-2013 Peanut Variety and Quality Evaluation trials conducted at Virginia Tech Tidewater Agricultural Research and Extension Center (AREC) (Suffolk, VA), Jack Pond farm (Sedley, Southampton Co., VA), Taylor Slade farm (Williamston, Martin Co., NC), NCDA Upper Coastal Plain Research Station (Rocky Mount, Edgecombe Co., NC), NCDA Border Belt Tobacco Research Station (Whiteville, Columbus Co., NC), Dan McDuffie farm (Council, Bladen Co., NC), and the Clemson University Pee Dee AREC at Florence, SC, and Edisto AREC at Blackville, SC.**

	Blanching characteristics							Fatty acid profile																				
	Extra large kernels							Medium kernels							Palmitic (16:0)	Stearic (18:0)	Oleic (18:1)	Linoleic (18:2)	Arachidic (20:0)	Eicosenoic (20:1)	Behenic (22:0)	Lignoceric (24:0)	Iodine value	O/L ratio	Total saturates	P/S ratio	Long-chain sats	Calcium content
	Moisture			Kernels blanched				Moisture			Blanching																	
	Before	After	Loss	Split	Whole	Not	Partial	Before	After	Loss	Split	Whole	Not	Partial														
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%		%	ppm
Trials	13	13	13	13	13	13	13	12	12	12	12	12	12	12	21	21	21	21	21	21	21	21	21	21	21	21	21	15
Wynne	5.7	4.8	1	2.0	91.3	0.0	5.0	5.7	4.85	1.4	2.9	81.5	1.2	12.7	6.5	2.7	79.4	5.5	1.2	1.5	2.1	1.1	79.0	16.39	13.6	0.40	4.4	654
Sugg	5.7	4.8	1	2.1	91.2	0.0	5.0	5.7	4.86	1.5	2.9	78.4	1.9	14.9	9.9	2.5	52.8	28.9	1.2	1.2	2.3	1.1	96.5	1.87	17.1	1.70	4.6	678
Difference	+0.0†	-0.0^{ns}	-0.0^{ns}	-0.1^{ns}	+0.1^{ns}	0.0^{ns}	+0.1^{ns}	-0.0^{ns}	-0.02^{ns}	-0.1*	-0.1^{ns}	+2.5^{ns}	-0.8^{ns}	-1.5^{ns}	-3.4**	+0.1**	+26.6**	-23.5**	-0.0^{ns}	+0.3**	-0.2**	-0.0^{ns}	-17.5**	+14.52**	-3.5**	-1.30**	-0.2**	-24^{ns}

ns,†,*,** Denote differences that were not significant or significant at the 10%, 5%, and 1% levels of probability, respectively.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY
Peanut (*Arachis hypogaea*)

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
N.C. State University as represented by the Director of NCSU's Office of Technology Transfer	N08081olJC	Wynne
ADDRESS *(Street and No. or RD No., City, State, Zip Code, and Country)*		FOR OFFICIAL USE ONLY
Office of Technology Transfer, Box 8210 N.C. State University, Raleigh, NC 27695-8210 USA		PVPO NUMBER

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box e.g. [0][8][9] or [0][9]) when a number is either 99 or less or 9 or less.

1. BOTANICAL TYPE:

[1] Flowering on the Main Stem (At 60-70 Days After Planting): 1 = Absent (no) 2 = Present (yes) 3 = Mixed (main stem and lateral branches)

[1] Branching Pattern (At 60-90 Days After Planting): 1 = Alternate – Pairs of vegetative and reproductive branches (Virginia or Runner)

2 = Sequential – Continuous reproductive branches (Valencia or Spanish)
3 = Other (Specify) _____

2. PLANT (At 60-90 Days After Planting):

[2] Habit: 1 = Prostrate 2 = Decumbent 3 = Semi-Erect 4 = Erect

[3] Branching: 1 = Sparse (typical Valencia) 2 = Moderate (typical Spanish) 3 = Profuse (typical Runner or Bunch)

3. MATURITY:

[1] Region: 1 = Virginia, North Carolina 2 = Southeast United States 3 = Southwest United States 4 = Other

[1][4][0] Number of Days to Maturity

[0][8] Number of Days Earlier Than (Specify) Bailey

[0][1] Number of Days Later Than (Specify) VA 98R

4. LEAVES:

[2] Color at 60 Days (Munsell Book of Color _____)
[5][8] mm Leaflet Length (Basal Leaflet of the Youngest Fully Opened Leaf)
[2].[4] Leaflet Length/Width Ratio

1=Light Green (10gy 6/9)
2= Medium Green (2.5G 5/9)
3=Dark green (5G 4/7)
4= Other (Specify)

5. POD (Average for 20 pods at maturity):

[0][7][7] mm Length [3][2] mm Diameter

[5][0][9][1] KG./HA. Pod Yield

[ ][5] % Less Than (Specify) Bailey

[1][1] % More Than (Specify) Spain

[9][0] % Fancy Size: (% riding 13.46 mm, 34/64 Inch, Spacing Set on Presizer Roller)

[2] Number of Seeds per Pod: 1 = 1 2 = 2 3 =3 4 =3-4 5 = 2-3-4

[2] Constriction: 1 = Shallow or None 2 = Medium 3 = Deep

[1] Surface: 1 = Glabrous 2 = Pubescent

[2] Beak: 1 = Absent 2 = Inconspicuous 3 = Pronounced

6. SEED (Mature, cured but not aged):

[0][3] Coat Color: 1 = White 2 = Cream 3 = Tan 4 = Light Pink 5 = Pink 6 = Red 7 = Wine 8 = Dark Purple 9 = Variegated 10 = Other (Specify) _____

[1] Coat Surface: 1 = Smooth 2 = Indented [1] 1 = Uniform Color 2 = Blemished

[4] Shape: 1 = Spheriodal 2 = Short Broad 3 = Elongated-Slender 4 = Cylindrical-tapered Ends 5 = Cylindrical Blunt Ends 6 = Other (Specify) _____

[2][0] mm Length [1][0] mm Width [9][8] Grams per 100 Seeds (8% Moisture)

7. DISEASE RESISTANCE: (0 = Not Tested, 1 = Susceptible, 2 = Moderately Susceptible, 3 = Moderately Resistant, 4 = Resistant)

[0] Southern Stem Rot [3] CBR [3] Early Leaf Spot [3] Tomato Spotted Wilt Virus

[0] Late Leaf Spot [3] Sclerotinia Blight [0] Pod Rot Complex [ ] Other (Specify) _____

8. INSECT RESISTANCE: (0 = Not Tested, 1 = Susceptible, 2 = Moderately Susceptible, 3 = Moderately Resistant, 4 = Resistant)

[0] Thrips [0] Burrowing Bug [0] Leaf Hopper [0] Nematode (Specify species) _____

[0] Southern Corn Rootworm [0] Lesser Cornstalk Borer [0] Aphid [ ] Other (Specify) _____

9. COMPARISON OF SUBMITTED VARIETY WITH ONE OR MORE SIMILAR VARIETIES:

VARIETY	OIL* (% at 0% moisture)	PROTEIN* (% at 0% moisture)	OLEIC: * LINOLEIC ACID RATIO	IODINE* NUMBER	SHELLING (%)	SMK** (%)	ELK+ (%)	MAIN STEM HEIGHT (CM)
Submitted	49.4	N/A	16.51	79.83	70.9	65.3	43.0	32
Similar	50.3	N/A	16.55	78.42	71.0	65.1	42.6	32
Name of Similar Variety	Sugg	N/A	Florida Fancy	Florida Fancy	NC-V 11	Bailey	Sugg	Phillips

* From Sound Mature Kernels ** Sound Mature Kernels + Extra Large Kernels

10. INDICATE A VARIETY WHICH MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	VARIETY	CHARACTER	VARIETY
Pod Color	NC 12C	Seedling Vigor	N/A
Seed Dormancy	N/A	Hull Thickness	NC-V 11
Seed Size	Brantley	Leaf Color	N/A

11. COMMENTS: (Additional description or clarification – such as: relative disease reactions may be compared with standard varieties)

Exhibit D
Additional Description of NCSU Peanut Cultivar Release 'Wynne'

'Wynne,' tested as experimental breeding line N08081olJC, is a large-seeded virginia-type peanut (*Arachis hypogaea* L.) cultivar selected in a program to develop cultivars with multiple disease resistance. This program was funded by grower check-off dollars from the National Peanut Board and the North Carolina Peanut Growers Association. Additional support for the project came from the North Carolina Crop Improvement Association, the North Carolina Foundation Seed Producers, Inc., and the Peanut Foundation. Wynne has alternate branching pattern, intermediate runner growth habit, and medium green foliage. Wynne has approximately 68% jumbo pods and 21% fancy pods, seeds with light pink seed coat averaging 1039 mg seed^{-1}, and extra large kernel content of approximately 42%. Wynne has the high-oleic trait patented by the University of Florida (US Patent Nos. 5,922,390, 6,063,984, and 6,121,472)[1,2,3]. The main effect of this trait is modified fatty acid content with elevated oleic fatty acid content and depressed linoleic acid content that increases the shelf life of their seeds and products made from them. Wynne is partially resistant to the four most common diseases in the Virginia-Carolina peanut production area: early leaf spot caused by *Cercospora arachidicola* Hori, Cylindrocladium black rot (CBR) caused by *C. parasiticum* Crous, Wingfield & Alfenas, Sclerotinia blight (SB) caused by *S. minor* Jagger, and tomato spotted wilt caused by *Tomato spotted wilt tospovirus* (TSWV).

Breeding and testing history of Wynne. Wynne was developed by a combination of pedigree selection and modified pedigree selection (single-seed descent) among and within families descended from a three-way cross. The initial cross, X03036, was made in the winter of 2002-2003 using cultivar 'Bailey'[4] as a female and high-oleic large-seeded cultivar 'Brantley'[5] as a male. The second cross, X03157, was made in the summer of 2003 using Bailey as a female and F_1 plants of cross X03036 as males. Five BC_1F_1 seeds from the second cross were planted at the 2003-2004 winter nursery at the Illinois Crop Improvement Association's facility in Juana Diaz, PR (the "Puerto Rico Winter Nursery" or "PRWN"). Five individual BC_1F_1 plants were harvested and their $BC_1F_{1:2}$ progeny planted separately at the Peanut Belt Research Station (PBRS) at Lewiston, NC, in Bertie Co. in 2004.

The $BC_1F_{1:2}$ plots were subjected to plant selection, and five progeny of each selected plant were subjected to gas chromatography to determine their fatty acid types. Families with all five members having linoleic acid levels below 77 g kg^{-1} were deemed to represent high-oleic plant selections. $BC_1F_{2:3}$ progenies of selected high-oleic $BC_1F_{1:2}$ plants were planted at the 2004-2005 PRWN where a single pod was harvested from each mature plant within a family, then the balance of the pods were harvested in bulk. A single $BC_1F_{2:4}$ seed was shelled from each pod in the single-pod harvest bag, and a selection nursery was planted in 2005 at PBRS. Bulk-harvested $BC_1F_{2:4}$ seeds were used to plant replicated (r=2) trials to evaluate the families' reactions to the foliar pathogens leaf spot and TSWV and to soil-borne diseases CBR and SB. The leaf spot trial was conducted at PBRS with no application of leaf spot fungicide during the season. The TSWV trial was conducted at PBRS with plants in wide (20 on or 51 cm) plant spacing and with no insecticide applied to control thrips (*Franklinella fusca*) the predominant insect vector of TSWV in the Virginia-Carolina area. The CBR trial was conducted on infested soil at the

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[1] Norden, A.J., D.W. Gorbet, D.A. Knauft, and C.T. Young. 1987. Variability in oil quality among peanut genotypes in the Florida breeding program. Peanut Sci. 14: 7-11.

[2] Knauft, D.A., K.M. Moore, and D.W. Gorbet. 1993. Further studies on the inheritance of fatty acid composition in peanut. Peanut Sci. 20: 74-76.

[3] Moore, K.M., and D.A. Knauft. 1989. The inheritance of high oleic acid in peanut. J. Hered. 80: 252-253.

[4] Isleib, T.G., S.R. Milla-Lewis, H.E. Pattee, S.C. Copeland, M.C. Zuleta, B.B. Shew, J.E. Hollowell, T.H. Sanders, L.O. Dean, K.W. Hendrix, M. Balota, and J.W. Chapin. 2011. Registration of 'Bailey' peanut. J. Plant Reg. 5: 27-39. [doi:10.3198/jpr2009.12.0742crc]

[5] Isleib, T.G., P.W. Rice, R.W. Mozingo II, S.C. Copeland, J.B. Graeber, W.F. Novitzky, H.E. Pattee, T.H. Sanders, R.W. Mozingo, and D.L. Coker. 2006. Registration of 'Brantley' peanut. Crop Sci. 46: 2309-2311.

Upper Coastal Plain Research Station (UCPRS) at Rocky Mount, NC, in Edgecombe Co. with no application of metam sodium, the fumigant used to control CBR. The SB trial was conducted on infested soil at the Joey Baker farm in Bertie County, NC, with no application of fluazinam or boscalid, the only effective SB controls labeled at the time. Plots were planted in May and stand counts made in June. Symptomatic plants were counted in each plot, the data converted to a proportion of symptomatic plants in each plot, and families with low incidence of TSW, CBR and SB identified. Defoliation due to leaf spot was rated shortly before harvest using a nine-point proportional scale where a rating of 1 indicated no defoliation, a rating of 5 indicated 50% defoliation, and a rating of 9 indicated complete defoliation. Plant selections were made in the resistant $BC_1F_{2:4}$ families in the nursery grown for that purpose at PBRS.

Twenty-one $BC_1F_{6:7}$ progenies of selected high-oleic plants were grown at the 2006-2007 PRWN, and harvested only in bulk as no further selection within families was anticipated. $BC_1F_{6:8}$ families were grown in replicated trials to assess reactions to leaf spot and TSW at PBRS, CBR at UCPRS, and SB at the Ben Harris farm in Northampton County, NC. The families were also entered in yield trials at PBRS and UCPRS with full chemical control of diseases, and a seed nursery was planted for bulk harvest at PBRS to multiply seed of selected families. By this stage, only descendants of the second and fourth BC_1F_1 plants had survived the selection process and only one BC_1F_2 plant per BC_1F_1. Within the BC_1F_1-derived families, all descendants traced to only five BC_1F_4 plants.

In 2008, the high-oleic disease-resistant families identified as X03157-BC1F1-04-01-S-02-S-02: F09 was numbered N08081olJC. In 2008 N08081olJC was tested in the Jumbo Line Advanced Test (JAT) at PBRS and UCPRS. In 2009 N08081olJC was tested in the Adsvanced Yield Test (AYT) at PBRS, UCPRS, and the Border Belt Tobacco Research Station (BBTRS) at Whiteville, NC, in Columbus Co. From 2009 through 2012, both lines were tested at three sites in the AYT. Because of its high yield potential, N08081olJC was used as a performance check in several trials during 2009-2012. Reactions of both lines to field incidence of leaf spot, CBR, SB, and TSWV were measured in trials of lines developed for reasons other than disease resistance in 2009-2012. SB and CBR were also measured under controlled conditions in greenhouse assays conducted in 2012 and 2013. In 2010 through 2012, N08081olJC was entered in the PVQE program. N08081olJC was entered in the UPPT as an "official" entry in 2010 and 2011, *i.e.*, an entry tested at all locations versus "local options" which are tested only at individual sites at the discretion of the participants, and as a local option in 2012[6].

Agronomic performance and grade. Yield of Wynne is superior to most existing virginia-type cultivars except Bailey and 'Sugg'. In the NCSU Advanced Yield Tests averaged across more tan 20 tests conducted over six years (Table 1), Wynne yielded significantly more than 'CHAMPS'[7], 'Gregory'[8], 'NC-V 11'[9], Perry, 'Phillips'[10]. Wynne yielded numerically but not significantly more than Bailey, Sugg, and 'Florida Fancy', the only other high-oleic cultivar on the market. Pod characteristics and grade of Wynne were most similar to CHAMPS and Gregory. Wynnne had fairly bright pods of the jumbo fraction.

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[6] Branch, W.D.; Balota, M.; Isleib, T.G.; Chapin, J.W.; Bostick, J.P.; Tillman, B.L.; Burow, M.D.; Baring, M.; Chamberlin, K.D. 2013. Uniform Peanut Performance Tests, 2012. Univ. Georgia Coastal Plain Exp. Stn. Prog. Rep. No. 4-13. X p.

[7] Mozingo R.W., T.A. Coffelt, P.M. Phipps, and D.L. Coker. 2006. Registration of 'CHAMPS' peanut. Crop Sci. 46: 2711-2712.

[8] Isleib, T.G., P.W. Rice, R.W. Mozingo, R.W. Mozingo, II, and H.E. Pattee. 1999. Registration of 'Gregory' peanut. Crop Sci. 39: 1526.

[9] Wynne J.C., T.A. Coffelt, R.W. Mozingo, and W.F. Anderson. 1991b. Registration of 'NC-V11' peanut. Crop Sci. 31: 484-485.

[10] Isleib, T.G., P.W. Rice, R.W. Mozingo II, S.C. Copeland, J.B. Graeber, H.E. Pattee, T.H. Sanders, R.W. Mozingo, and D.L. Coker. 2006. Registration of 'Phillips' peanut. Crop Sci. 46: 2308-2309.

In the PVQE trials in 2010 through 2012 (Table 2), Wynne was not different (P<0.05) from Sugg in yield, although it did yield less than Bailey (4136 vs. 4431 lb A^{-1}, P<0.05)and have lesser value per acre ($664 vs. $762 A^{-1}, P<0,05). However, compared with Florida Fancy, the only other high oleic line tested in this period, Wynne were numerically if not statistically higher in yield and value, and all three had greater brightness of jumbo and fancy pods. All three had acceptable contents of jumbo and fancy pods. The differences between the results obtained by the NCSU breeding project and the PVQE program may reflect the use of irrigation at all NCDA research stations used as test locations by the NCSU project, the sparse seeding rate used in the NCSU trials, or the differential occurrence or severity of diseases at some test sites.

In the Uniform Peanut Performance Test (UPPT) conducted in the Virginia-Carolina peanut production area, Wynne had the competitive, being not lower than the highest yielding line. It was in the same statistical grouping as the other NCSU experimental lines, Bailey, Sugg, and Georgia-08V, a very late maturing high oleic Virginia-type line released by the University of Georgia[11] (Table 3).

Disease reactions. Wynne was selected from a program of early generation testing dedicated to development of lines with resistance to leaf spot, CBR, SB, and TSWV. Advanced-level field testing of their reactions to diseases prevalent in the Virginia-Carolina production area began in 2007.

Resistance to early leafspot. Wynne's reaction to early leaf spot was evaluated from 2007 through 2012 in nine field trials at PBRS with no application of leaf spot fungicide during the entire season (Table 4). Defoliation was rated on a proportional scale of 1 (no defoliation) to 9 (complete defoliation) in late September or early October each year. In trials for yield, yield was measured on the unsprayed plots at PBRS. Wynne was not significantly different in defoliation from the two most resistant cultivars, Florida Fancy (3.73 vs. 3.54 defoliation score) and Bailey (3.73 vs. 3.66 score). Likewise, yield of Wynne (3640 lb A^{-1} mean yield) was not different in yield from the two cultivars with the greatest yields, Bailey (3979 lb A^{-1}) and Sugg (3831 lb A^{-1}). Wynne should be considered partially resistant to early leaf spot.

Resistance to Cylindrocladium black rot. Wynne's reaction to CBR was evaluated from 2007 through 2011 in five field trials in an infested field at UCPRS with no application of metam sodium fumigant prior to planting (Table 4). A test was conducted in 2012, but no CBR developed. Reactions to CBR are expressed as the proportion of plants exhibiting symptoms in plots grown on infested soil. CBR incidence Wynne (0.251) was not different from the mean of Bailey (0.212), a resistant cultivar. In greenhouse assays in which the roots of plants grown for 6 wk in medium inoculated with 25 microsclerotia per gram of medium were rated for root rot on a proportional scale of 0=none to 5=complete, Wynne scored numerically lower but not significantly different from the most resistant lines tested including Bailey and resistant check NC 3033 (Table 5). Wynne lines should be considered partially resistant to CBR, exhibiting levels of resistance comparable to those of Bailey.

Resistance to Sclerotinia blight. Wynne's reaction to Sclerotinia blight was evaluated from 2008 through 2012 in four field trials at infested sites with no application of fluazinam or boscalid to control the disease (Table 4). No SB developed in the trials in 2007, so only useful data were obtained only in 2008-2012. Reactions to SB are expressed as the proportion of plants exhibiting symptoms in plots grown on infested soil. Sclerotinia incidence in Wynne was numerically but not significantly (P<0.05) larger than that of Bailey (0.640 vs. 0.521, ns). In greenhouse assays where mainstem lesion growth was measured up to 7 days after inoculation and incubation in a mist chamber (Table 5), the length of lesion on Wynne on the seventh day after inoculation was

[11] Branch, W.D. 2009. Registration of 'Georgia-08V' peanut. J. Plant Reg. 3: 143-145. (doi:10.3198/jpr2008.11.0657crc)

longer than that of Sugg, the best cultivar tested (84.4 vs. 59.5 mm, $P<0.05$), but the area under the disease progress curve for Wynne (184.9 mm days) was not different from those of Sugg (113.1 mm days) or resistant check N96076L (149.8 mm days). Wynne should be considered partially resistant to Sclerotinia blight.

Field resistance to tomato spotted wilt virus. Wynne's reaction to TSWV was evaluated from 2007 through 2012 in seven field trials at PBRS with no application of insecticide to control the thrips that vector the disease and at wide (20 inch) plant spacing (Table 4). The thin seeding rate and withholding of insecticide from the plots promoted feeding by thrips, the vector of TSWV. Disease reaction to TSWV was measured as the proportion of plants exhibiting foliar symptoms at any time during the season. TSWV incidence in Wynne (0.144 mean) was numerically but not significantly ($P<0.05$) less than incidence in Bailey (0.200), generally considered to be a resistant cultivar. These lines should be considered partially field resistant to TSWV.

Flavor characteristics. Flavor of the lines was evaluated by a eight-member trained descriptive sensory analysis panel in the Department of Food, Bioprocessing, and Nutrition Sciences at N.C. State University under the direction of Dr. MaryAnne Drake. Samples were prepared and presented to the panel by Dr. Harold E. Pattee, formerly of the USDA-ARS and currently of the Department of Crop Science at NCSU. Samples of sound mature kernels from three locations in each of the 2007 though 2011 growing seasons were submitted for evaluation by the sensory panel along with samples of check cultivars and other elite breeding lines. The roasted peanut, sweet, and bitter, attributes of flavor in the lines were quite good compared with virginia-type cultivars (Table 6) and also in comparison with runner-type flavor standards Florunner and Georgia Green.

Blanching characteristics. Blanching characteristics of extra large and medium kernels of Wynne grown in the PVQE trials in 2010-2012 were similar to those of released cultivars (Table 7). Wynne did show slightly elevated levels of partially blanched extra large and medium kernels compared with some cultivars but had fewer split ELK and medium kernels than some cultivars.

Oil chemistry and calcium content. Wynne has high oleic oil chemistry. The high-oleic trait produces an array of changes in the fatty acid composition of peanut oil compared with normal-oleic cultivars such as Bailey, CHAMPS, Gregory, NC-V 11, Perry, Phillips, and Sugg (Table 8), most notably the elevation of oleic acid content (78.8 for Wynne vs. 52.9% for the normal-oleic group, $P<0.0001$), and the reduction of linoleic acid content (6.3 vs. 28.6%, $P<0.0001$) and palmitic acid content (6.8 vs. 10.4%, $P<0.0001$). These changes resulted in differences between Wynne and the normal-oleic group in iodine value (79.8 vs. 96.0, $P<0.0001$), oleic-to-linoleic acid ratio (16.51 vs. 1.87, $P<0.0001$), total saturated fatty acids (13.4 vs. 17.3%, $P<0.0001$), and the ratio of polyunsaturated to saturated fatty acids (0.45 vs. 1.66, $P<0.0001$). There were small but statistically significant changes in arachidic acid and eicosenoic acid as well. Compared with normal-oleic cultivars, Wynne should exhibit the extended shelf life that has been documented in high-oleic lines.

Although the calcium content of Wynne was less than those of Bailey and the older normal-oleic cultivars used for comparison, it was not less than the calcium contents of Sugg or Florida Fancy (Table 7). It remains to be seen if the lesser calcium content of Wynne translates into reduced germination and stands of those lines in the field. No such reduction has been noted heretofore.

Table 1. Results from N.C. State University yield trials conducted at up to three sites in North Carolina (Peanut Belt Research Station at Lewiston, Upper Coastal Plain Research Station at Rocky Mount, and Border Belt Tobacco Research Station at Whiteville) in 2007-2012.

Type / line	Extent of testing: No. of tests	Years: No.	First	Last	Foreign material	Loose shelled kernels	Weight of 100 pods	Farmer stock fancy pods: Content	Farmer stock fancy pods: Brightness	Jumbo pods: Content	Jumbo pods: Brightness	Jumbo pods: Redness	Jumbo pods: Yellowness	Fancy pods: Content	Fancy pods: Brightness	Fancy pods: Redness	Fancy pods: Yellowness	Jumbo-to-fancy ratio	Weight of 100 seeds	Super extra large kernels	Extra large kernels	Sound mature kernels	Sound splits	Other kernels	Meat content	Support price	Pod yield	Crop value§	Value rank
					%	%	g	%	*Hunter L score*	%	*Hunter L score*	*Hunter a score*	*Hunter b score*	%	*Hunter L score*	*Hunter a score*	*Hunter b score*		g	%	%	%	%	%	%	$/lb	lb/A	$/A	
Experimentals	**67**	**5**	**2007**	**2011**	**1.12^{ns}**	**0.49^{ns}**	**263.2^{c}**	**75.3$^{\alpha}$**	**44.90$^{\alpha}$**	**44.8$^{\alpha}$**	**45.27$^{\alpha}$**	**3.56^{ns}**	**14.92$^{\alpha}$**	**30.5$^{\beta}$**	**42.83$^{\beta}$**	**3.72^{ns}**	**14.02$^{\beta}$**	**1.69$^{\alpha}$**	**100.7$^{\alpha}$**	**16.8$^{\alpha}$**	**42.0$^{\alpha}$**	**62.0^{ns}**	**4.9^{ns}**	**2.9^{ns}**	**66.9^{ns}**	**17.45^{ns}**	**3379$^{\alpha}$**	**592$^{\alpha}$**	–
N08075olCT*	23	5	2007	2011	1.17^{bc}	0.43^{abc}	249.8^{bc}	68.2^{cf}	44.84^{ab}	29.7^{dc}	44.28^{bc}	3.59^{a}	14.72^{a-d}	38.5^{a-d}	44.92^{abc}	3.89^{bc}	14.91^{ab}	0.76^{cf}	93.1^{g}	14.7^{c}	40.2^{bc}	61.4^{d}	5.3^{cde}	3.3^{cde}	66.8^{bcd}	17.39^{bc}	3289^{ab}	576^{ab}	5
Wynne*	23	5	2007	2011	0.84^{a}	0.40^{abc}	270.4^{a}	78.6^{abc}	45.07^{ab}	51.4^{b}	45.78^{a}	3.57^{a}	15.03^{a}	27.2^{e}	42.14^{c}	3.63^{a}	13.75^{e}	2.07^{bc}	103.9^{ab}	18.2^{b}	43.8^{a}	62.8^{abc}	4.7^{a-d}	2.4^{a}	67.5^{ab}	17.61^{ab}	3516^{a}	621^{a}	1
N08082olJCT*	21	5	2007	2011	1.33^{c}	0.65^{d}	269.3^{a}	79.0^{ab}	44.80^{abc}	53.3^{ab}	45.74^{a}	3.53^{a}	15.01^{ab}	25.7^{cf}	41.43^{cf}	3.65^{a}	13.40^{cf}	2.23^{b}	105.1^{a}	17.5^{b}	42.1^{ab}	61.8^{bcd}	4.6^{ab}	3.0^{bcd}	66.4^{cd}	17.35^{cd}	3334^{ab}	580^{ab}	4
Cultivars	**291**	**5**	**2007**	**2011**	**0.99^{ns}**	**0.40^{ns}**	**248.7$^{\beta}$**	**72.2$^{\beta}$**	**44.47$^{\beta}$**	**37.1$^{\beta}$**	**43.97$^{\beta}$**	**3.82^{ns}**	**14.47$^{\beta}$**	**35.0$^{\alpha}$**	**43.94$^{\alpha}$**	**3.84^{ns}**	**14.35$^{\alpha}$**	**1.20$^{\beta}$**	**96.2$^{\beta}$**	**14.2$^{\beta}$**	**38.7$^{\beta}$**	**62.0^{ns}**	**4.9^{ns}**	**3.1^{ns}**	**66.9^{ns}**	**17.43^{ns}**	**2917$^{\beta}$**	**509$^{\beta}$**	–
Bailey	57	5	2007	2011	0.87^{a}	0.37^{ab}	254.5^{b}	67.5^{f}	44.97^{ab}	28.2^{c}	43.67^{cd}	3.70^{a}	14.51^{cdc}	39.3^{ab}	45.27^{a}	3.87^{b}	15.01^{a}	0.73^{f}	94.3^{g}	10.2^{c}	38.3^{cd}	62.2^{a-d}	5.3^{dc}	2.9^{bc}	67.6^{ab}	17.54^{abc}	3484^{a}	607^{a}	2
CHAMPS	50	5	2007	2011	0.98^{ab}	0.52^{bcd}	245.9^{cd}	71.6^{d}	45.22^{a}	35.2^{c}	44.81^{ab}	4.38^{b}	14.63^{a-c}	36.6^{cd}	45.19^{ab}	3.64^{a}	14.62^{bcd}	1.00^{d}	97.2^{cf}	9.6^{cf}	36.7^{d}	63.0^{a}	4.8^{bcd}	3.1^{bcd}	67.6^{ab}	17.61^{ab}	2907^{cd}	504^{cd}	7
Florida Fancy*	22	4	2008	2011	0.94^{ab}	0.24^{a}	252.7^{bc}	77.1^{bc}	43.24^{c}	49.2^{b}	43.57^{cd}	3.89^{ab}	14.31^{def}	27.8^{e}	41.77^{ef}	3.91^{bc}	13.64^{e}	1.87^{c}	98.0^{de}	14.6^{c}	37.1^{d}	59.9^{e}	5.3^{cde}	3.0^{bcd}	65.2^{e}	16.94^{e}	3104^{bc}	517^{bc}	6
Gregory	39	5	2007	2011	1.12^{abc}	0.54^{cd}	265.7^{a}	80.1^{a}	44.23^{cd}	56.2^{a}	44.91^{ab}	3.65^{a}	14.82^{abc}	23.6^{f}	41.06^{f}	3.78^{ab}	13.29^{f}	2.47^{a}	100.1^{cd}	22.2^{a}	43.9^{a}	62.2^{a-d}	4.1^{a}	2.7^{ab}	66.4^{d}	17.37^{cd}	2607^{e}	455^{d}	11
NC-V 11	24	5	2007	2011	0.98^{ab}	0.36^{ab}	231.0^{e}	67.5^{f}	43.98^{d}	28.6^{e}	43.10^{d}	3.79^{ab}	14.02^{f}	39.0^{abc}	44.16^{cd}	4.07^{c}	14.33^{d}	0.75^{cf}	90.2^{h}	8.3^{f}	32.4^{e}	61.6^{cd}	4.7^{abc}	3.5^{dc}	66.2^{d}	17.18^{dc}	2712^{dc}	464^{cd}	9
Perry	27	5	2007	2011	1.12^{abc}	0.48^{bcd}	238.3^{de}	66.7^{f}	44.18^{cd}	30.0^{dc}	43.13^{d}	3.56^{a}	14.29^{ef}	36.4^{d}	44.00^{d}	3.76^{ab}	14.45^{cd}	0.94^{de}	93.4^{g}	12.2^{d}	36.7^{d}	62.1^{a-d}	5.1^{b-e}	3.5^{c}	67.2^{abc}	17.47^{abc}	2532^{c}	458^{d}	10
Phillips	28	5	2007	2011	1.03^{abc}	0.40^{abc}	249.5^{bc}	70.8^{de}	45.34^{a}	33.3^{cd}	44.45^{bc}	3.74^{ab}	14.59^{b-e}	37.5^{bcd}	45.44^{a}	3.83^{ab}	14.78^{ab}	0.92^{de}	95.2^{fg}	17.7^{b}	41.2^{b}	62.9^{ab}	4.6^{ab}	3.0^{bc}	67.5^{ab}	17.61^{ab}	2671^{dc}	475^{cd}	8
Sugg	44	5	2007	2011	0.87^{a}	0.27^{a}	252.1^{bc}	76.1^{c}	44.64^{bc}	36.3^{c}	44.15^{bc}	3.87^{ab}	14.61^{b-e}	39.9^{a}	44.60^{bcd}	3.87^{bc}	14.68^{bc}	0.93^{de}	101.5^{bc}	18.5^{b}	43.2^{a}	62.2^{a-d}	5.6^{c}	3.2^{cde}	67.8^{a}	17.69^{a}	3321^{ab}	590^{a}	3
Mean					0.82	0.40	256.4	75.2	44.6	40.7	44.57	3.85	14.43	34.49	43.69	3.79	14.04	1.34	97.6	15.0	41.3	63.4	4.5	2.8	67.8	17.69	3342	591	
CV (%)					67.0	83.4	6.4	6.3	2.4	16.0	4.1	33.8	4.9	13.0	3.3	9.7	4.3	30.2	4.5	22.9	8.7	3.0	23.6	29.8	2.3	2.3	16.0	16.3	

§ Crop value calculated by applying the federal support to all pounds per acre.

* Indicates lines with the high oleic seed oil trait patented by the University of Florida.

α,β Type means within a column followed by the same lower-case Greek letter are not different by t-test (P<0.05).

a,b,c Line means within a column followed by the same lower-case Roman letter are not different by t-test (P<0.05).

ns Indicates means for traits for which the F-tests for variation among types or that for lines within types was not significant (P<0.05).

Table 2. Summary of agronomic performance and grade for NCSU lines entered in the 2010-2012 Peanut Variety and Quality Evaluation (PVQE) program conducted at four or five locations in the Virginia-Carolina production area each year with early- and late-dug tests at some locations and years, totaling 22 tests over 3 years.

Type / line	Extent of testing				Foreign material	Loose shelled kernels	Farmer stock fancy pods		Jumbo pods		Fancy pods		Jumbo to-fancy ratio	Extra large kernels	Sound mature kernels	Sound splits	Other kernels	Damaged kernels	Total meat	Support price	Pod yield	Crop value§	Value rank
	Tests	Years No.	First	Last			Content	Brightness	Content	Brightness	Content	Brightness											
					%	%	%	*Hunter L*	%	*Hunter L*	%	*Hunter L*		%	%	%	%	%	%	*¢/lb*	*lb/A*	*$/A*	
Experimentals	**65**	**3**	**2010**	**2012**	**1.46^{ns}**	**1.16^{ns}**	**88.6$^{\alpha}$**	**41.09$^{\alpha}$**	**61.6$^{\alpha}$**	**41.68$^{\alpha}$**	**27.0$^{\beta}$**	**39.58$^{\beta}$**	**2.96$^{\alpha}$**	**43.0$^{\alpha}$**	**61.7^{ns}**	**2.33^{ns}**	**2.20^{ns}**	**3.25^{ns}**	**69.6^{ns}**	**15.95^{ns}**	**4196^{ns}**	**694^{ns}**	–
N08075olCT*	21	3	2010	2012	1.70^{d}	0.79^{a}	84.6^{c}	41.15^{bc}	45.1^{cf}	41.99^{ab}	39.6^{bc}	40.29^{bc}	1.18^{de}	42.5^{bcd}	62.8^{abc}	2.28^{ab}	2.42^{cf}	2.44^{ab}	70.0^{bc}	16.52^{ab}	4236^{ab}	727^{ab}	2
Wynne*	22	3	2010	2012	1.37^{abc}	1.31^{d}	89.3^{bc}	40.85^{cd}	67.8^{c}	41.33^{c}	21.5^{d}	38.88^{de}	3.65^{bc}	41.9^{cd}	60.7^{de}	2.36^{abc}	2.27^{cde}	3.77^{d}	69.2^{cd}	15.39^{cde}	4136^{bc}	664^{c}	6
N08082olJCT*	22	3	2010	2012	1.30^{ab}	1.38^{d}	91.8^{a}	41.28^{bc}	72.0^{ab}	41.70^{bc}	19.9^{d}	39.58^{cd}	4.06^{b}	44.6^{ab}	61.8^{cd}	2.34^{abc}	1.91^{abc}	3.52^{cd}	69.5^{c}	15.95^{bc}	4217^{a}	690^{bc}	4
Cultivars	**164**	**3**	**2010**	**2012**	**1.46^{ns}**	**1.11^{ns}**	**85.9$^{\beta}$**	**40.72$^{\beta}$**	**51.4$^{\beta}$**	**40.96$^{\beta}$**	**34.7$^{\alpha}$**	**40.09$^{\alpha}$**	**1.99$^{\beta}$**	**40.8$^{\beta}$**	**62.0^{ns}**	**2.27^{ns}**	**2.18^{ns}**	**3.51^{ns}**	**69.9^{ns}**	**15.85^{ns}**	**4121^{ns}**	**674^{ns}**	–
Bailey	22	3	2010	2012	1.28^{ab}	1.20^{cd}	84.3^{c}	42.00^{a}	41.6^{fg}	42.35^{a}	42.6^{ab}	41.49^{a}	1.07^{de}	40.5^{de}	63.7^{ab}	2.25^{ab}	2.21^{b-e}	2.35^{a}	70.5^{ab}	16.80^{a}	4431^{a}	762^{a}	1
CHAMPS	16	3	2010	2012	1.28^{ab}	1.31^{d}	86.0^{dc}	41.56^{ab}	50.2^{d}	41.75^{abc}	36.5^{c}	41.08^{ab}	1.55^{d}	38.4^{e}	61.8^{cd}	1.98^{a}	2.25^{b-e}	3.58^{cd}	69.6^{bc}	15.78^{b-e}	4083^{bc}	660^{c}	7
Florida Fancy*	22	3	2010	2012	1.65^{cd}	1.36^{d}	90.7^{ab}	38.42^{f}	68.3^{bc}	38.66^{f}	22.7^{d}	37.65^{f}	3.27^{c}	39.2^{e}	60.2^{e}	2.75^{c}	2.00^{e-g}	3.62^{cd}	68.5^{de}	15.56^{cde}	4062^{bc}	653^{c}	8
Gregory	22	3	2010	2012	1.76^{d}	1.36^{d}	91.3^{a}	40.36^{de}	75.0^{a}	40.65^{de}	16.4^{e}	38.59^{ef}	5.24^{a}	45.8^{a}	60.5^{de}	1.98^{a}	1.85^{ab}	4.09^{d}	68.2^{c}	15.04^{e}	4127^{bc}	652^{c}	9
NC-V 11	22	3	2010	2012	1.57^{bcd}	0.88^{ab}	80.5^{f}	40.00^{c}	37.9^{g}	40.10^{c}	42.8^{a}	39.79^{cd}	0.93^{e}	32.4^{f}	60.3^{de}	2.30^{ab}	2.73^{f}	3.86^{d}	69.2^{cd}	15.25^{de}	4093^{bc}	643^{c}	11
Perry	22	3	2010	2012	1.84^{d}	1.04^{bc}	80.9^{f}	40.98^{bc}	41.6^{fg}	41.06^{cd}	39.5^{c}	40.80^{ab}	1.11^{de}	39.2^{e}	63.0^{abc}	2.22^{ab}	2.36^{def}	3.56^{cd}	71.1^{a}	15.94^{bcd}	3911^{c}	644^{c}	10
Phillips	22	3	2010	2012	1.12^{a}	0.90^{ab}	85.8^{dc}	41.29^{bc}	47.6^{de}	41.55^{bc}	38.4^{c}	40.88^{ab}	1.38^{de}	46.2^{a}	64.2^{a}	2.09^{a}	1.79^{a}	3.03^{bc}	71.0^{a}	16.47^{ab}	4119^{bc}	696^{bc}	3
Sugg	16	3	2010	2012	1.19^{a}	0.86^{ab}	87.7^{cd}	41.13^{bc}	49.4^{de}	41.55^{bc}	38.7^{c}	40.46^{abc}	1.38^{de}	44.5^{abc}	62.5^{bc}	2.59^{bc}	2.22^{b-e}	3.99^{d}	71.3^{a}	15.94^{bcd}	4141^{abc}	684^{bc}	5
Mean					1.51	1.16	86.5	40.59	54.7	40.94	31.9	39.70	2.32	41.2	61.8	2.30	2.15	3.44	69.7	15.83	4111	674	
CV (%)					31.0	28.1	3.7	2.3	11.9	2.6	16.1	4.1	34.7	10.2	3.8	29.9	30.7	30.8	2.1	7.3	11.0	14.5	

§ Crop value computed by applying the federal support price to the entire yield.
* Denotes lines with the high oleic fatty acid trait.
α,β Type means within a column followed by the same lower-case Greek letter are not different by t-test (P<0.05).
a,b,c Line means within a column followed by the same lower-case Roman letter are not different by t-test (P<0.05).
ns Denotes means for which the F-test of variation among means was not significant (P<0.05).

Table 3. 2001-2012 Uniform Peanut Performance Test (UPPT) summary across Virginia-Carolina locations (Suffolk, VA, two diggings at Lewiston, NC, and Blackville, SC).

Type / Line	Extent of testing: No. of tests	Years: No.	Years: First	Years: Last	Pod yield	Yield rank	Fancy pods	Total sound mature kernels	Other kernels	Damaged kernels	Meat content	Extra large kernels: % cleaned pods	Extra large kernels: % shelled goods	Medium kernels: % cleaned pods	Medium kernels: % shelled goods	No. 1 kernels: % cleaned pods	No. 1 kernels: % shelled goods	Weight of 100 SMK
					lb/A		*% cleaned pods*											
Experimentals	**24**	**3**	**2010**	**2012**	**4597$^{\alpha}$**	**--**	**85.5α**	**69.5$^{\beta}$**	**2.0^{ns}**	**1.4^{ns}**	**72.1^{ns}**	**47.2^{ns}**	**67.8^{ns}**	**15.4^{ns}**	**22.3^{ns}**	**3.4^{ns}**	**4.9^{ns}**	**91.[illegible]^{ns}**
N08075olCT*	6	3	2010	2012	4915^{a}	1	78.5^{bcd}	70.1^{bc}	2.2^{ns}	--	72.8^{bcd}	46.8^{bc}	66.5^{b}	15.8^{cd}	22.8^{cd}	3.1^{ns}	4.5^{ns}	95.[illegible]^{cdfg}
Wynne*	9	3	2010	2012	4541^{ab}	4	89.2^{a}	69.7^{cd}	1.8^{ns}	1.1^{ns}	72.0^{cd}	48.8^{abc}	70.0^{ab}	14.5^{cd}	20.8^{cd}	3.2^{ns}	4.6^{ns}	102.[illegible]^{a}
N08082olJCT*	9	3	2010	2012	4335^{abc}	6	88.8^{a}	68.6^{d}	2.1^{ns}	1.6^{ns}	71.4^{d}	45.9^{cd}	66.7^{b}	15.9^{c}	23.3^{c}	3.8^{ns}	5.5^{ns}	99.[illegible]^{ab}
Cultivars	**94**	**9**	**2001**	**2012**	**4080$^{\beta}$**	**--**	**78.6$^{\beta}$**	**70.7$^{\alpha}$**	**1.7^{ns}**	**1.0^{ns}**	**72.9^{ns}**	**45.8^{ns}**	**64.8^{ns}**	**17.4^{ns}**	**24.7^{ns}**	**3.9^{ns}**	**5.6^{ns}**	**93.[illegible]^{ns}**
Bailey	21	8	2005	2012	4622^{a}	2	75.4^{d}	71.1^{b}	1.7^{ns}	0.8^{ns}	73.3^{ab}	42.6^{de}	59.8^{c}	21.0^{b}	29.6^{b}	4.0^{ns}	5.6^{ns}	89.[illegible]^{fg}
CHAMPS	20	9	2002	2012	4020^{bcd}	7	77.6^{cd}	70.6^{bc}	2.0^{ns}	1.1^{ns}	73.0^{bc}	41.7^{e}	59.0^{c}	21.3^{b}	30.2^{b}	4.5^{ns}	6.4^{ns}	93.1^{c-f}
Georgia-08V*	4	1	2006	2006	4574^{ab}	3	78.3^{bcd}	72.9^{a}	1.2^{ns}	1.4^{ns}	74.7^{a}	50.0^{abc}	68.6^{ab}	15.7^{cd}	21.6^{cd}	3.6^{ns}	5.0^{ns}	93.9^{b-f}
Gregory	9	5	2003	2009	3677^{cd}	10	84.8^{ab}	70.3^{bc}	1.7^{ns}	--	72.4^{bcd}	51.8^{a}	73.5^{a}	12.4^{d}	17.7^{d}	3.6^{ns}	5.2^{ns}	97.6^{a-d}
NC-V 11	12	9	2001	2012	3925^{bcd}	8	70.4^{d}	69.5^{cd}	2.0^{ns}	1.0^{ns}	71.9^{d}	36.2^{f}	52.4^{d}	24.7^{a}	35.2^{a}	4.6^{ns}	6.6^{ns}	84.7^{g}
Perry	7	4	2001	2007	3427^{d}	11	84.1^{abc}	69.4^{cd}	1.9^{ns}	--	71.7^{d}	46.4^{bcd}	66.7^{b}	15.6^{cd}	22.6^{cd}	3.9^{ns}	5.7^{ns}	99.2^{abc}
Phillips	7	3	2002	2007	3858^{bcd}	9	76.3^{cd}	70.6^{bc}	1.8^{ns}	1.0^{ns}	72.9^{bcd}	47.8^{abc}	67.7^{b}	15.1^{cd}	21.3^{cd}	3.9^{ns}	5.6^{ns}	90.7^{efg}
Sugg	14	6	2005	2010	4540^{ab}	5	82.3^{abc}	71.2^{b}	1.6^{ns}	0.9^{ns}	73.3^{b}	50.2^{ab}	70.5^{ab}	13.9^{cd}	19.5^{cd}	3.3^{ns}	4.7^{ns}	97.1^{a-e}
Mean					3964		78.1	70.6	1.9	1.0	72.8	44.6	63.1	18.0	25.6	4.0	5.7	93.3
CV (%)					15.1		8.6	1.8	25.6	45.1	1.5	8.1	7.2	15.2	15.6	21.8	22.5	5.7

α,β Type means followed by the same lower-case Greek letter within a column are not different (P<0.05) by t-test.

a,b,c Line means followed by the same lower-case Roman letter within a column are not different (P<0.05) by t-test.

ns Denotes means of traits for which there was no significant variation among effects by F-test.

* Denotes lines with the high oleic fatty acid trait.

Table 4. Disease reactions to early leaf spot, Cylindrocladium black rot, Sclerotinia blight, and tomato spotted wilt measured in the field by the North Carolina State University breeding project.

	Leaf spot[§]						Cylindrocladium black rot (CBR)[§§]					Sclerotinia blight[§§§]					Tomato spotted wilt (TSW)[§§§§]				
	Extent of Testing						Extent of Testing					Extent of Testing					Extent of Testing				
Group or line	No. of tests	Years No.	First	Last	Defoliation score	Pod yield without spray	No. of tests	Years No.	First	Last	Incidence	No. of tests	Years No.	First	Last	Incidence	No. of tests	Years No.	First	Last	Incidence
					1=none to 9=complete	*lb/A*					*0 to 1*					*0 to 1*					*0 to 1*
Experimentals	**23**	**6**	**2007**	**2012**	**3.57±0.11$^{\alpha}$**	**3749±140^{ns}**	**14**	**4**	**2007**	**2011**	**0.221±0.048$^{\alpha}$**	**15**	**4**	**2008**	**2012**	**0.594±0.042^{ns}**	**26**	**6**	**2007**	**2012**	**0.144±0.026$^{\alpha}$**
N08075olCT*	8	6	2007	2012	3.27±0.18^{a}	3831±220^{ab}	5	4	2007	2011	0.185±0.075^{a}	5	4	2008	2012	0.506±0.070^{ab}	9	6	2007	2012	0.135±0.041^{a}
Wynne*	9	5	2007	2012	3.73±0.17^{ab}	3640±242^{abc}	5	3	2007	2011	0.251±0.075^{ab}	6	3	2009	2012	0.640±0.066^{bc}	10	5	2007	2012	0.144±0.039^{a}
N08082olJCT*	6	5	2007	2012	3.73±0.21^{ab}	3777±242^{ab}	4	3	2007	2011	0.228±0.085^{ab}	4	3	2009	2012	0.635±0.078^{abc}	7	5	2007	2012	0.153±0.047^{a}
Cultivars	**102**	**6**	**2007**	**2012**	**4.21±0.06$^{\beta}$**	**3335±66^{ns}**	**64**	**4**	**2007**	**2011**	**0.366±0.023$^{\beta}$**	**67**	**4**	**2008**	**2012**	**0.583±0.021^{ns}**	**117**	**6**	**2007**	**2012**	**0.363±0.012$^{\beta}$**
Bailey	18	6	2007	2012	3.66±0.12^{ab}	3979±151^{a}	12	4	2007	2011	0.212±0.047^{a}	13	4	2008	2012	0.521±0.041^{ab}	20	6	2007	2012	0.200±0.027^{ab}
CHAMPS	10	6	2007	2012	4.45±0.16^{c}	3264±203^{bcd}	6	4	2007	2011	0.420±0.068^{bcd}	8	4	2008	2012	0.649±0.054^{bc}	11	6	2007	2012	0.356±0.037^{c}
Florida Fancy*	6	5	2008	2012	3.54±0.21^{ab}	3702±220^{ab}	3	3	2008	2011	0.275±0.097^{abc}	5	4	2008	2012	0.442±0.070^{a}	6	5	2008	2012	0.295±0.051^{bc}
Gregory	13	6	2007	2012	4.55±0.14^{c}	2831±177^{d}	8	4	2007	2011	0.318±0.059^{abc}	7	4	2008	2012	0.593±0.058^{abc}	16	6	2007	2012	0.369±0.030^{c}
NC-V 11	12	6	2007	2012	4.62±0.15^{c}	3036±177^{d}	7	4	2007	2011	0.527±0.063^{d}	7	4	2008	2012	0.665±0.058^{bc}	14	6	2007	2012	0.407±0.033^{cd}
Perry	15	6	2007	2012	4.42±0.13^{c}	2899±157^{d}	10	4	2007	2011	0.447±0.051^{cd}	9	4	2008	2012	0.514±0.051^{ab}	18	6	2007	2012	0.491±0.028^{d}
Phillips	14	6	2007	2012	4.62±0.13^{c}	3137±176^{cd}	10	4	2007	2011	0.530±0.051^{d}	8	4	2008	2012	0.702±0.054^{c}	17	6	2007	2012	0.469±0.029^{d}
Sugg	14	6	2007	2012	3.84±0.14^{b}	3831±168^{ab}	8	4	2007	2011	0.202±0.059^{a}	10	4	2008	2012	0.576±0.048^{abc}	15	6	2007	2012	0.320±0.032^{c}
Mean					4.13	3383					0.339					0.611					0.333
CV (%)					11.9	15.2					47.1					24.2					35.4

§ Leaf spot caused by foliar fungus *Cercospora arachidicola* causes defoliation and yield reduction. Defoliation and yield were measured in two-rep trials of F_6-derived families grown without fungicidal spray protection at the Peanut Belt Research Station (PBRS) at Lewiston, NC.

§§ Incidence of CBR caused by soil-borne fungus *Cylindrocladium parasiticum* measured in two- or three-rep trials of F_6-derived families on infested soil without fumigation with metam sodium at the Upper Coastal Plain Research Station (UCPRS) at Rocky Mount, NC. Incidence measured as the fraction of emerged plants composed of symptomatic ones.

§§§ Incidence of Sclerotinia blight caused by soil-borne fungus *S. minor* was measured infested soil without foliar protectant sprays fluazinam (Omega® 500F) or boscalid (Endura®) at UCPRS or various sites in Bertie, Chowan and Northampton Counties, NC.

§§§§ Incidence of tomato spotted wilt caused by thrips-borne foliar *Tomato spotted wilt tospovirus* was measured in two- or three-rep trials of F_6-derived families using 50-cm seed spacing with no use of insecticides to control tobacco thrips (*Frankliniella fusca*), the vector of TSW in the Virginia-Carolina area.

* Denotes lines with the high oleic fatty acid trait.

α,β Market type means within a column followed by the same lower case Greek letter are not different by t-test (P<0.05).

a,b,c Line means within a column followed by the same lower case Roman letter are not different by t-test (P<0.05).

ns Variables for which means are followed by "ns" did not have an F-test for that effect that met the criterion for statistical significance (P<0.05).

Table 5. Reactions to Sclerotinia blight and Cylindrocladium black rot measured in greenhouse assays.

Group or line	Sclerotinia blight: Years of testing No.	First	Last	Lesion length: 4 days after inoculation	5 days after inoculation	6 days after inoculation	7 days after inoculation	Area under the disease progress curve	Cylindrocladium black rot: Years of testing No.	First	Last	Root rot score
				mm				*mm days*				*1=none to 5=complete*
Experimentals	**5**	**2008**	**2013**	**15.70±2.57^{ns}**	**36.40±3.72^{ns}**	**55.06±4.34^{ns}**	**76.85±4.77^{ns}**	**168.53±15.96^{ns}**	**5**	**2008**	**2013**	**2.05±0.24$^{\beta}$**
N08075olCT*	5	2008	2013	14.57±3.02^{a-d}	31.83±4.37^{ab}	50.62±5.10^{ab}	68.17±5.60^{abc}	152.79±18.74^{abc}	5	2008	2013	2.07±0.28^{bc}
Wynne*	2	2011	2012	17.17±4.87^{a-d}	40.98±7.05^{bc}	59.70±8.22^{bc}	84.44±9.02^{bcd}	184.93±30.22^{a-d}	2	2011	2012	1.94±0.45^{ab}
N08082olJCT*	2	2011	2012	15.37±4.87^{a-d}	36.38±7.05^{abc}	54.85±8.22^{abc}	77.94±9.02^{a-d}	167.88±30.22^{a-d}	2	2011	2012	2.16±0.45^{ab}
Cultivars	**11**	**2003**	**2013**	**15.50±1.00^{ns}**	**34.78±1.44^{ns}**	**55.02±1.68^{ns}**	**76.83±1.85^{ns}**	**167.39±6.18n$^{\alpha}$**	**10**	**2004**	**2013**	**2.77±0.09$^{\alpha}$**
Bailey	11	2003	2013	14.66±2.51^{a-d}	35.23±3.63^{abc}	54.77±4.24^{b}	74.49±4.65^{bc}	164.93±15.58^{bc}	10	2004	2013	2.44±0.23^{bc}
CHAMPS	5	2008	2012	15.77±3.02^{a-d}	35.03±4.38^{abc}	57.28±5.11^{bc}	79.90±5.61^{bcd}	172.56±18.77^{bcd}	5	2008	2012	3.44±0.28^{c}
Florida Fancy*	5	2009	2013	16.86±3.03^{bcd}	36.62±4.38^{bc}	52.21±5.11^{ab}	68.97±5.61^{abc}	166.98±18.78^{bcd}	5	2009	2013	2.77±0.28^{abc}
Gregory	10	2003	2013	15.16±2.51^{a-d}	34.61±3.63^{abc}	56.03±4.24^{bc}	81.91±4.65^{cd}	169.60±15.58^{bcd}	9	2004	2013	2.86±0.23^{abc}
NC-V 11	6	2003	2013	11.40±3.02^{ab}	29.70±4.37^{ab}	49.52±5.11^{ab}	73.05±5.60^{abc}	142.52±18.76^{ab}	5	2008	2013	2.73±0.28^{abc}
Perry	9	2003	2012	20.39±2.73^{cd}	39.81±3.95^{bc}	61.49±4.61^{bc}	83.50±5.06^{cd}	195.69±16.95^{cd}	8	2004	2012	2.62±0.25^{abc}
Phillips	10	2003	2013	21.91±2.51^{d}	43.34±3.63^{c}	69.19±4.24^{c}	93.30±4.65^{d}	213.79±15.58^{d}	9	2004	2013	2.69±0.23^{abc}
Sugg	9	2003	2013	7.82±3.02^{a}	23.91±4.36^{a}	39.65±5.09^{a}	59.54±5.59^{a}	113.07±18.72^{a}	8	2004	2013	2.59±0.28^{abc}
Resistant checks	**11**	**2003**	**2013**	**13.77±1.91^{ns}**	**33.17±2.77^{ns}**	**53.48±3.23^{ns}**	**74.00±3.55^{ns}**	**158.57±11.88^{ns}**	**10**	**2004**	**2013**	**2.87±0.18$^{\beta}$**
GP-NC 343	2	2010	2012	18.45±4.85^{a-d}	41.39±7.02^{bc}	64.86±8.20^{bc}	88.20±8.99^{cd}	195.95±30.12^{bcd}	2	2010	2012	3.10±0.45^{abc}
N96076L	11	2003	2013	14.44±2.51^{abc}	31.07±3.63^{ab}	48.66±4.24^{ab}	66.57±4.65^{ab}	149.81±15.58^{abc}	10	2004	2013	3.14±0.23^{bc}
NC 3033	3	2008	2013	10.24±3.95^{ab}	27.06±5.72^{ab}	45.95±6.67^{ab}	67.18±7.32^{abc}	132.54±24.52^{ab}	3	2008	2013	2.56±0.36^{abc}
PI 576636	4	2010	2013	11.96±3.41^{abc}	33.17±4.93^{abc}	54.43±5.75^{ab}	74.06±6.31^{abc}	155.99±21.14^{abc}	4	2010	2013	2.70±0.31^{abc}
Mean				15.12	34.09	54.18	75.18	164.10				2.65
CV (%)				43.9	28.2	20.7	16.4	25.1				23.0

* Denotes lines with the high oleic fatty acid trait.

α,β Market type means within a column followed by the same lower case Greek letter are not different by t-test (P<0.05).

a,b,c Line means within a column followed by the same lower case Roman letter are not different by t-test (P<0.05).

ns Variables for which means are followed by "ns" did not have an F-test for that effect that met the criterion for statistical significance (P<0.05).

Table 6. Flavor profiles from samples grown measured in the field at the Peanut Belt Research Station at Lewiston, NC, the Upper Coastal Plain Research Station at Rocky Mount, NC, and the Border Belt Tobacco Research Station at Whiteville, NC. All flavor assessment performed by the trained descriptive sensory panel in North Carolina State University's Department of Food, Bioprocessing, and Nutrition Sciences under the direction of Dr. Mary Anne Drake.

	Extent of testing					Sensory attribute intensity														
Type	No. of samples	No. of tests	Years: No.	First	Last	Roast color	Under-roast	Over-roast	Roasted peanut§	Sweet§	Nutty after-taste	Bitter§	Astringent	Fruity / fermented	Stale / cardboard	Wood-hulls-skins	Painty	Moldy	Petroleum / chemical	Throat/tongue burn	Bitter after-taste
						CIELAB L score*	*flavor intensity score (1=not perceptible to 14=most intense possible)*														
Experimentals	**68**	**11**	**5**	**2007**	**2011**	**58.10^{ns}**	**1.64$^{\alpha}$**	**1.71$^{\beta}$**	**4.89$^{\alpha}$**	**4.19$^{\beta}$**	**3.87$^{\alpha}$**	**2.22$^{\beta}$**	**2.91$^{\beta}$**	**1.14$^{\alpha}$**	**1.38$^{\alpha}$**	**3.28$^{\alpha}$**	**1.00^{ns}**	**1.00$^{\alpha}$**	**1.00^{ns}**	**1.8**	**2.21$^{\alpha\beta}$**
N08075olCT*	23	11	5	2007	2011	59.16^{a}	1.70^{ab}	1.64^{bc}	5.02^{a}	4.23^{b}	3.90^{a}	2.18^{cd}	2.83^{b}	1.05^{a}	1.36^{a}	3.31^{bcd}	0.99^{ns}	0.99^{a}	1.00^{ns}	1.8	2.21^{bcd}
Wynne*	24	11	4	2008	2011	57.60^{de}	1.69^{ab}	1.75^{c}	4.76^{abc}	4.19^{bc}	3.79^{ab}	2.08^{bc}	3.05^{c}	1.24^{ab}	1.44^{ab}	3.29^{bc}	1.00^{ns}	1.00^{ab}	1.00^{ns}	1.9	2.28^{bcd}
N08082olJCT*	21	11	4	2008	2011	57.55^{e}	1.54^{a}	1.75^{c}	4.87^{ab}	4.15^{bc}	3.92^{a}	1.97^{ab}	2.85^{b}	1.14^{ab}	1.35^{a}	3.23^{ab}	0.99^{ns}	1.00^{ab}	1.00^{ns}	1.8	2.15^{b}
Cultivars	**127**	**14**	**5**	**2007**	**2011**	**58.37^{ns}**	**2.08$^{\beta}$**	**1.48$^{\alpha}$**	**4.52$^{\beta}$**	**3.93γ**	**3.55$^{\beta}$**	**2.07$^{\alpha}$**	**2.85$^{\beta}$**	**1.24$^{\alpha}$**	**1.58$^{\beta}$**	**3.41$^{\beta}$**	**1.00^{ns}**	**1.02$^{\alpha\beta}$**	**1.00^{ns}**	**1.96^{ns}**	**2.29$^{\beta}$**
Bailey	40	13	5	2007	2011	58.19^{bcd}	1.92^{cd}	1.58^{bc}	4.57^{cd}	4.10^{bcd}	3.55^{cd}	2.17^{cd}	2.87^{b}	1.43^{bc}	1.68^{c}	3.43^{cd}	1.03^{ns}	1.03^{bc}	1.00^{ns}	2.10^{c}	2.20^{bc}
CHAMPS	6	3	1	2009	2009	58.81^{ab}	2.37^{ef}	1.36^{ab}	4.49^{bcd}	3.88^{b-e}	3.49^{bcd}	2.36^{cd}	2.89^{bc}	1.17^{ab}	1.51^{abc}	3.34^{a-d}	0.98^{ns}	1.01^{abc}	1.00^{ns}	1.70^{a}	2.44^{d}
Gregory	26	14	5	2007	2011	58.71^{ab}	2.00^{cde}	1.39^{ab}	4.60^{cd}	3.99^{cde}	3.62^{bc}	2.22^{cd}	2.83^{b}	1.21^{ab}	1.63^{c}	3.36^{bcd}	1.00^{ns}	1.02^{abc}	1.01^{ns}	2.13^{c}	2.23^{bcd}
NC-V 11	6	5	2	2007	2009	58.91^{ab}	2.23^{def}	1.40^{abc}	4.48^{bcd}	3.75^{de}	3.47^{bcd}	2.16^{bcd}	2.78^{ab}	1.13^{ab}	1.68^{bc}	3.57^{d}	0.99^{ns}	1.01^{abc}	1.00^{ns}	1.81^{ab}	2.23^{bcd}
Perry	12	8	3	2007	2011	58.57^{abc}	2.00^{cde}	1.50^{abc}	4.51^{cd}	3.78^{c}	3.55^{bcd}	2.30^{d}	2.87^{b}	1.18^{ab}	1.55^{abc}	3.36^{bcd}	1.00^{ns}	1.02^{abc}	1.00^{ns}	1.95^{abc}	2.31^{bcd}
Phillips	10	6	2	2009	2011	57.72^{b-e}	2.04^{c-f}	1.51^{abc}	4.44^{d}	3.82^{de}	3.61^{bcd}	2.24^{cd}	2.91^{bc}	1.22^{ab}	1.50^{abc}	3.50^{cd}	0.99^{ns}	1.04^{abc}	1.00^{ns}	2.03^{bc}	2.39^{d}
Sugg	27	14	5	2007	2011	57.70^{cde}	1.97^{cd}	1.59^{bc}	4.54^{cd}	4.17^{bc}	3.58^{cd}	2.12^{bcd}	2.80^{b}	1.36^{b}	1.54^{bc}	3.33^{bcd}	1.00^{ns}	1.00^{ab}	1.00^{ns}	2.02^{bc}	2.24^{bcd}
Sensory checks	**29**	**10**	**5**	**2007**	**2011**	**58.11^{ns}**	**2.10$^{\beta}$**	**1.35$^{\alpha}$**	**4.45$^{\beta}$**	**4.40$^{\alpha}$**	**3.34γ**	**2.08$^{\alpha}$**	**2.74$^{\alpha}$**	**1.52$^{\beta}$**	**1.81γ**	**3.29$^{\alpha\beta}$**	**1.01^{ns}**	**1.05$^{\beta}$**	**1.01^{ns}**	**1.98^{ns}**	**2.16$^{\alpha}$**
Florunner	8	4	4	2007	2011	58.59^{abc}	2.36^{f}	1.41^{abc}	4.50^{cd}	4.06^{b-e}	3.32^{d}	2.34^{d}	2.84^{b}	1.40^{bc}	2.03^{d}	3.49^{cd}	0.98^{ns}	1.08^{c}	1.00^{ns}	2.10^{bc}	2.39^{cd}
Georgia Green	21	10	5	2007	2011	57.64^{cde}	1.85^{bc}	1.29^{a}	4.41^{d}	4.75^{a}	3.37^{d}	1.80^{a}	2.65^{a}	1.65^{c}	1.59^{bc}	3.08^{a}	1.03^{ns}	1.01^{ab}	1.01^{ns}	1.85^{ab}	1.93^{a}
Mean						58.07	1.88	1.59	4.63	4.17	3.63	2.10	2.84	1.33	1.57	3.37	1.01	1.02	1.00	1.98	2.19
CV (%)						2.0	19.2	24.7	9.0	9.5	9.5	14.1	7.6	28.6	18.8	8.8	9.0	6.5	1.7	15.4	11.4 5.4

§ Roasted peanut intensity analyzed using fruity intensity and roast color (linear) as covariates; sweet intensity analyzed using fruity intensity as a covariate; bitter intensity analyzed using roast color (linear) as a covariate;

* Denotes lines with the high oleic fatty acid trait.

α,β Type means within a column followed by the same lower case Greek letter are not different by t-test (P<0.05).

a,b,c Line means within a column followed by the same lower case Roman letter are not different by t-test (P<0.05).

ns Variables for which means are followed by "ns" did not have an F-test for that effect that met the criterion for statistical significance (P<0.05).

Table 7. Blanching characteristics of extra large and medium kernels of N08075olCT, Wynne, and N08082olJCT compared with released cultivars in the 2010-2012 Peanut Variety and Quality Evaluation (PVQE) trials, three years at four or five locations.

					Extra large kernels							Medium kernels						
	Extent of testing				Moisture content		Blan-		Blanched			Moisture content		Blan-		Blanched		
	No.	Years			Before	After	ching		Whole	Not	Partially	Before	After	ching		Whole	Not	Partially
Line	tests	No.	First	Last	roasting	roasting	loss	Splits	kernels	blanched	blanched	roasting	roasting	loss	Splits	kernels	blanched	blanched
										%								
Experimentals	**39**	**3**	**2010**	**2012**	**5.73^{ns}**	**4.84^{ns}**	**1.22^{ns}**	**2.28^{ns}**	**91.62^{ns}**	**0.01^{ns}**	**4.57$^{\beta}$**	**5.64^{ns}**	**4.85^{ns}**	**1.32^{ns}**	**2.78$^{\alpha}$**	**82.76$^{\beta}$**	**1.29^{ns}**	**11.44$^{\alpha}$**
N08075olCT*	13	3	2010	2012	5.74^{ns}	4.84^{abc}	1.19^{ns}	2.58^{bc}	91.77^{ns}	0.04^{ns}	4.25^{bc}	5.64^{ns}	4.84^{ns}	1.33^{ns}	3.15^{abc}	82.59^{cd}	0.98^{a-d}	11.56^{ab}
Wynne*	13	3	2010	2012	5.72^{ns}	4.82^{a}	1.25^{ns}	2.06^{ab}	91.69^{ns}	0.00^{ns}	4.60^{c}	5.66^{ns}	4.84^{ns}	1.29^{ns}	2.48^{a}	84.04^{a-d}	1.09^{a-e}	10.70^{ab}
N08082olJCT*	13	3	2010	2012	5.72^{ns}	4.86^{abc}	1.22^{ns}	2.20^{ab}	91.39^{ns}	0.00^{ns}	4.86^{c}	5.62^{ns}	4.87^{ns}	1.35^{ns}	2.73^{ab}	81.64^{dc}	1.80^{dc}	12.06^{a}
Cultivars	**96**	**3**	**2010**	**2012**	**5.72^{ns}**	**4.85^{ns}**	**1.26^{ns}**	**2.26^{ns}**	**92.68^{ns}**	**0.00^{ns}**	**3.14$^{\alpha}$**	**5.61^{ns}**	**4.83^{ns}**	**1.34^{ns}**	**3.38$^{\beta}$**	**84.40$^{\alpha}$**	**1.25^{ns}**	**9.18$^{\beta}$**
Bailey	13	3	2010	2012	5.71^{ns}	4.83^{ab}	1.23^{ns}	2.51^{bc}	92.98^{ns}	0.00^{ns}	2.88^{a}	5.65^{ns}	4.85^{ns}	1.34^{ns}	3.44^{abc}	86.61^{a}	0.69^{a}	7.48^{a}
CHAMPS	9	2	2010	2011	5.72^{ns}	4.89^{c}	1.29^{ns}	1.82^{a}	93.29^{ns}	0.00^{ns}	3.23^{ab}	5.67^{ns}	4.82^{ns}	1.31^{ns}	3.06^{abc}	85.30^{abc}	0.71^{ab}	9.15^{abc}
Florida Fancy*	13	3	2010	2012	5.72^{ns}	4.83^{ab}	1.27^{ns}	3.06^{c}	92.57^{ns}	0.00^{ns}	2.48^{a}	5.64^{ns}	4.84^{ns}	1.35^{ns}	3.32^{abc}	84.59^{abc}	1.81^{cde}	8.44^{ab}
Gregory	13	3	2010	2012	5.73^{ns}	4.81^{a}	1.14^{ns}	1.85^{a}	91.85^{ns}	0.00^{ns}	2.80^{a}	5.43^{ns}	4.79^{ns}	1.37^{ns}	3.64^{bc}	83.79^{bcd}	1.48^{a-e}	9.27^{abc}
NC-V 11	13	3	2010	2012	5.74^{ns}	4.85^{abc}	1.27^{ns}	2.01^{ab}	93.12^{ns}	0.00^{ns}	3.19^{ab}	5.62^{ns}	4.81^{ns}	1.33^{ns}	3.04^{ab}	86.28^{ab}	0.70^{a}	8.17^{a}
Perry	13	3	2010	2012	5.71^{ns}	4.87^{bc}	1.24^{ns}	2.32^{ab}	93.41^{ns}	0.00^{ns}	2.58^{a}	5.62^{ns}	4.83^{ns}	1.32^{ns}	4.02^{c}	85.82^{ab}	0.90^{abc}	7.58^{a}
Phillips	13	3	2010	2012	5.70^{ns}	4.88^{bc}	1.36^{ns}	2.49^{abc}	92.60^{ns}	0.00^{ns}	3.16^{ab}	5.60^{ns}	4.84^{ns}	1.38^{ns}	4.07^{c}	83.71^{bcd}	1.64^{b-e}	8.76^{ab}
Sugg	9	2	2010	2011	5.70^{ns}	4.83^{ab}	1.25^{ns}	2.01^{ab}	91.60^{ns}	0.00^{ns}	4.81^{c}	5.61^{ns}	4.86^{ns}	1.35^{ns}	2.45^{a}	79.14^{e}	2.05^{e}	14.56^{c}
Mean					5.72	4.84	1.22	2.34	92.14	0.00	3.68	5.62	4.83	1.35	3.29	83.75	1.26	9.92
CV (%)					1.0	1.4	13.4	33.7	3.2	1168.1	39.5	5.9	1.4	9.9	35.2	3.9	91.6	28.5

α,β Type means followed by the same lower-case Greek letter are not different by t-test (P<0.05).
a,b,c Line means followed by the same lower-case Roman letter are not different by t-test (P<0.05).
ns Indicates means for which the F-test of variation among levels was not significant (P<0.05).
* Denotes lines with the high oleic fatty acid trait.

Table 8. Fatty acid composition, iodine values, oleic-linoleic ratios, polysaturated-saturated ratios, and calcium content of seeds of N08075olCT, Wynne, and N08082olJCT compared with released cultivars in the 2010-2012 Peanut Variety and Quality Evaluation (PVQE) trials, three years at four or five locations.

Line	No. tests	Years No.	Years First	Years Last	Fatty acid contents: Palmitic (16:0)	Stearic (18:0)	Oleic (18:1)	Lino-leic (18:2)	Arach-idic (20:0)	Gado-leic (20:1)	Be-henic (22:0)	Ligno-ceric (24:0)	Iodine value†	Oleic-to to-linoleic ratio	Total satu-rates‡	Poly-un-saturate-to-saturate ratio§	Long-chain satu-rates¶	Cal-cium content
					% of total fatty acids										%		%	ppm
NCSU lines	**59**	**3**	**2010**	**2012**	**6.6$^{\alpha}$**	**2.6^{ns}**	**79.4$^{\alpha}$**	**5.7$^{\alpha}$**	**1.1^{ns}**	**1.5$^{\alpha}$**	**1.9$^{\alpha}$**	**1.0^{ns}**	**79.50$^{\alpha}$**	**16.38$^{\alpha}$**	**13.2$^{\alpha}$**	**0.42$^{\alpha}$**	**4.1$^{\alpha}$**	**661$^{\beta}$**
N08075olCT*	22	3	2010	2012	6.4^{a}	2.5^{ab}	79.7^{a}	5.6^{a}	1.1^{ab}	1.6^{a}	2.0^{abc}	1.1^{c}	79.58^{b}	16.13^{a}	13.0^{a}	0.43^{a}	4.1^{abc}	655^{d}
Wynne	22	3	2010	2012	6.8^{b}	2.7^{bcd}	78.8^{a}	6.3^{a}	1.1^{ab}	1.5^{c}	1.9^{a}	1.0^{ab}	79.83^{b}	16.51^{a}	13.4^{b}	0.45^{a}	4.0^{a}	654^{d}
N08082olJCT*	15	2	2010	2011	6.5^{ab}	2.7^{bcd}	79.8^{a}	5.3^{a}	1.2^{ab}	1.5^{bc}	1.9^{ab}	1.0^{abc}	79.09^{ab}	16.51^{a}	13.3^{ab}	0.40^{a}	4.1^{ab}	673^{cd}
Cultivars	**168**	**3**	**2010**	**2012**	**10.0$^{\beta}$**	**2.7^{ns}**	**56.2$^{\beta}$**	**25.7$^{\beta}$**	**1.2^{ns}**	**1.2$^{\beta}$**	**2.1$^{\beta}$**	**1.0^{ns}**	**93.83$^{\beta}$**	**3.71$^{\beta}$**	**16.9$^{\beta}$**	**1.50$^{\beta}$**	**4.3$^{\beta}$**	**745$^{\alpha}$**
Bailey	22	3	2010	2012	10.3^{de}	2.5^{ab}	52.8^{c}	29.0^{cd}	1.1^{ab}	1.2^{d}	2.1^{c-f}	1.0^{abc}	96.55^{de}	1.85^{b}	17.1^{de}	1.70^{cd}	4.2^{abc}	779^{ab}
CHAMPS	15	2	2010	2011	10.6^{ef}	3.0^{e}	53.5^{bc}	27.5^{bc}	1.2^{abc}	1.2^{d}	2.1^{efg}	1.0^{abc}	94.60^{c}	1.92^{b}	17.8^{f}	1.56^{b}	4.4^{cd}	811^{a}
Florida Fancy*	22	3	2010	2012	6.8^{b}	2.8^{cd}	79.1^{a}	5.3^{a}	1.2^{bc}	1.6^{b}	2.2^{g}	1.0^{bc}	78.42^{a}	16.55^{a}	14.1^{c}	0.38^{a}	4.5^{d}	686^{cd}
Gregory	22	3	2010	2012	9.9^{c}	2.8^{de}	55.1^{b}	26.7^{b}	1.2^{bc}	1.2^{d}	2.1^{def}	1.0^{ab}	94.60^{c}	2.08^{b}	17.0^{d}	1.58^{b}	4.3^{a-d}	758^{ab}
NC-V 11	22	3	2010	2012	10.9^{f}	2.4^{a}	51.0^{d}	30.5^{e}	1.1^{a}	1.1^{d}	2.0^{a-d}	1.1^{c}	97.48^{e}	1.72^{b}	17.4^{cd}	1.75^{d}	4.1^{abc}	745^{b}
Perry	22	3	2010	2012	10.5^{e}	2.8^{cd}	52.3^{cd}	29.1^{d}	1.2^{abc}	1.1^{d}	2.1^{efg}	1.0^{abc}	96.16^{d}	1.83^{b}	17.6^{f}	1.66^{c}	4.3^{bcd}	781^{ab}
Phillips	22	3	2010	2012	10.4^{de}	2.6^{abc}	52.1^{cd}	29.4^{de}	1.3^{c}	1.2^{d}	2.2^{fg}	1.0^{bc}	96.56^{de}	1.83^{b}	17.5^{f}	1.68^{cd}	4.5^{d}	724^{bc}
Sugg	21	3	2010	2012	10.1^{cd}	2.5^{ab}	53.8^{bc}	28.4^{cd}	1.1^{ab}	1.1^{d}	2.0^{b-e}	0.9^{a}	96.29^{d}	1.88^{b}	16.7^{d}	1.69^{cd}	4.1^{abc}	678^{cd}
Mean					8.9	2.7	63.1	19.7	1.2	1.3	2.1	1.0	89.52	7.52	15.8	1.18	4.3	722
CV (%)					6.0	12.4	4.0	11.2	20.7	7.1	9.2	14.3	2.0	32.0	4.1	11.5	11.1	11.1

α,β Type means followed by the same lower-case Greek letter are not different by t-test (P<0.05).
a,b,c Line means followed by the same lower-case Roman letter are not different by t-test (P<0.05).
ns Indicates means for which the F-test of variation among levels was not significant (P<0.05).
† Weighted sum of oleic, linoleic, and eicosenoic acid contents [0.8601(18:1)+1.7321(18:2)+0.7854(20:1)]
‡ Sum of palmitic, stearic, arachidic, behenic, and lignoceric acid contents.
§ Ratio of linoleic acid content to total saturated fatty acid content.
¶ Sum of arachidic, behenic, and lignoceric acid contents.

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EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
N.C. State University as represented by the Director of NCSU's Office of Technology Transfer	**N08081olJC**	**Wynne**
4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	5. TELEPHONE *(Include area code)*	6. FAX *(Include area code)*
Office of Technology Transfer, Box 8210 N.C. State University, Raleigh, NC 27695-8210 USA	**(919) 515-7199**	**(919) 515-3773**
	7. PVPO NUMBER	

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. **If no, please explain.** ☐ **YES** ☒ **NO**

The variety has the high-oleic trait patented by the University of Florida (US Patents Nos. 5,922,390, 6,063,984, and 6,121,472).

9. Is the applicant a U.S. national or a U.S. based entity? **If no, give name of country.** ☒ **YES** ☐ **NO**

10. Is the applicant the original owner? ☒ **YES** ☐ **NO** **If no, please answer one of the following:**

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?
☐ **YES** ☐ **NO** **If no, give name of country**

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?
☐ **YES** ☐ **NO** **If no, give name of country**

11. Additional explanation on ownership *(Trace ownership from original breeder to current owner. Use the reverse for extra space if needed)*:

PLEASE NOTE:
Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.